

Exploring Aeronautics			
2009 Science			
Core Curriculum Content Standards			
New Jersey Science			
Grades 5-6			
Activity/Lesson	State	Standards	
Fundamentals of Aeronautics (145-176)	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
Fundamentals of Aeronautics (145-176)	NJ	SCI.5-6.5.4.6.A.3	Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away.
Airplane Control(209-256)	NJ	SCI.5-6.5.2.6.E.2	Describe the force between two magnets as the distance between them is changed.
Airplane Control(209-256)	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
Airplane Control(209-256)	NJ	SCI.5-6.5.4.6.A.3	Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away.
How an Airplane Flies	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
The Tools of Aeronautics	NJ	SCI.5-6.5.2.6.E.1	Model and explain how the description of an object's motion from one observer's view may be different from a different observer's view.
The Tools of Aeronautics	NJ	SCI.5-6.5.2.6.E.3	Demonstrate and explain the frictional force acting on an object with the use of a physical model.
The Activity Center	NJ	SCI.5-6.5.2.6.E.2	Describe the force between two magnets as the distance between them is changed.
The Activity Center	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
The Activity Center	NJ	SCI.5-6.5.2.6.E.d	Sinking and floating can be predicted using forces that depend on the relative densities of objects and materials.
The Activity Center	NJ	SCI.5-6.5.4.6.A.3	Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away.
Science of Flight	NJ	SCI.5-6.5.2.6.E.1	Model and explain how the description of an object's motion from one observer's view may be different from a different observer's view.
Science of Flight	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
Science of Flight	NJ	SCI.5-6.5.2.6.E.3	Demonstrate and explain the frictional force acting on an object with the use of a physical model.
Science of Flight	NJ	SCI.5-6.5.4.6.E.1	Generate a conclusion about energy transfer and circulation by observing a model of convection currents.
Intro to Aeronautics (109-123)	NJ	SCI.5-6.5.2.6.E.2	Describe the force between two magnets as the distance between them is changed.
Intro to Aeronautics (109-123)	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.

Intro to Aeronautics (109-123)	NJ	SCI.5- 6.5.4.6.A.3	Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away.
Exploring Aeronautics			
2009 Science			
Core Curriculum Content Standards			
New Jersey Science			
Grades 7-8			
Activity/Lesson	State	Standards	
Fundamentals of Aeronautics (145-176)	NJ	SCI.7- 8.5.1.8.B.4	Use quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.
Fundamentals of Aeronautics (145-176)	NJ	SCI.7- 8.5.2.8.D.a	When energy is transferred from one system to another, the quantity of energy before transfer equals the quantity of energy after transfer. As an object falls, its potential energy decreases as its speed, and consequently its kinetic energy, increases. While an object is falling, some of the object's kinetic energy is transferred to the medium through which it falls, setting the medium into motion and heating it.
Fundamentals of Aeronautics (145-176)	NJ	SCI.7- 8.5.2.8.E.a	An object is in motion when its position is changing. The speed of an object is defined by how far it travels divided by the amount of time it took to travel that far.
Fundamentals of Aeronautics (145-176)	NJ	SCI.7- 8.5.2.8.E.b	Forces have magnitude and direction. Forces can be added. The net force on an object is the sum of all the forces acting on the object. An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion at constant velocity will continue at the same velocity unless acted on by an unbalanced force.
Fundamentals of Aeronautics (145-176)	NJ	SCI.7- 8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Airplane Control(209-256)	NJ	SCI.7- 8.5.2.8.E.a	An object is in motion when its position is changing. The speed of an object is defined by how far it travels divided by the amount of time it took to travel that far.
Airplane Control(209-256)	NJ	SCI.7- 8.5.2.8.E.1	Calculate the speed of an object when given distance and time.
Airplane Control(209-256)	NJ	SCI.7- 8.5.2.8.E.b	Forces have magnitude and direction. Forces can be added. The net force on an object is the sum of all the forces acting on the object. An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion at constant velocity will continue at the same velocity unless acted on by an unbalanced force.

Airplane Control(209-256)	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Tools of Aeronautics(257-326)	NJ	SCI.7-8.5.1.8.A.a	Core scientific concepts and principles represent the conceptual basis for model-building and facilitate the generation of new and productive questions.
How an Airplane Flies	NJ	SCI.7-8.5.2.8.B.a	When substances undergo chemical change, the number and kinds of atoms in the reactants are the same as the number and kinds of atoms in the products. The mass of the reactants is the same as the mass of the products.
How an Airplane Flies	NJ	SCI.7-8.5.2.8.E.a	An object is in motion when its position is changing. The speed of an object is defined by how far it travels divided by the amount of time it took to travel that far.
How an Airplane Flies	NJ	SCI.7-8.5.2.8.E.b	Forces have magnitude and direction. Forces can be added. The net force on an object is the sum of all the forces acting on the object. An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion at constant velocity will continue at the same velocity unless acted on by an unbalanced force.
How an Airplane Flies	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
How an Airplane Flies	NJ	SCI.7-8.5.4.8.A.c	Gravitation is a universal attractive force by which objects with mass attract one another. The gravitational force between two objects is proportional to their masses and inversely proportional to the square of the distance between the objects.
How an Airplane Flies	NJ	SCI.7-8.5.4.8.A.3	Predict how the gravitational force between two bodies would differ for bodies of different masses or bodies that are different distances apart.
The Tools of Aeronautics	NJ	SCI.7-8.5.1.8.A.b	Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.
The Tools of Aeronautics	NJ	SCI.7-8.5.1.8.C.a	Scientific models and understandings of fundamental concepts and principles are refined as new evidence is considered.
The Tools of Aeronautics	NJ	SCI.7-8.5.1.8.C.2	Revise predictions or explanations on the basis of discovering new evidence, learning new information, or using models.

The Tools of Aeronautics	NJ	SCI.7-8.5.1.8.D.b	In order to determine which arguments and explanations are most persuasive, communities of learners work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories (e.g., argumentation, representation, visualization, etc.).
The Tools of Aeronautics	NJ	SCI.7-8.5.2.8.C.2	Model and explain current technologies used to capture solar energy for the purposes of converting it to electrical energy.
The Tools of Aeronautics	NJ	SCI.7-8.5.4.8.A.2	Use evidence of global variations in day length, temperature, and the amount of solar radiation striking Earth's surface to create models that explain these phenomena and seasons.
The Tools of Aeronautics	NJ	SCI.7-8.5.4.8.C.3	Model the vertical structure of the atmosphere using information from active and passive remote-sensing tools (e.g., satellites, balloons, and/or ground-based sensors) in the analysis.
The Activity Center	NJ	SCI.7-8.5.2.8.E.b	Forces have magnitude and direction. Forces can be added. The net force on an object is the sum of all the forces acting on the object. An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion at constant velocity will continue at the same velocity unless acted on by an unbalanced force.
The Activity Center	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Science of Flight	NJ	SCI.7-8.5.1.8.A.3	Use scientific principles and models to frame and synthesize scientific arguments and pose theories.
Science of Flight	NJ	SCI.7-8.5.1.8.B.a	Evidence is generated and evaluated as part of building and refining models and explanations.
Science of Flight	NJ	SCI.7-8.5.1.8.B.1	Design investigations and use scientific instrumentation to collect, analyze, and evaluate evidence as part of building and revising models and explanations.
Science of Flight	NJ	SCI.7-8.5.1.8.B.b	Mathematics and technology are used to gather, analyze, and communicate results.
Science of Flight	NJ	SCI.7-8.5.1.8.B.2	Gather, evaluate, and represent evidence using scientific tools, technologies, and computational strategies.
Science of Flight	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Integrating with Aeronautics	NJ	SCI.7-8.5.1.8.A.b	Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.

Integrating with Aeronautics	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Intro to Aeronautics (109-123)	NJ	SCI.7-8.5.1.8.B.1	Design investigations and use scientific instrumentation to collect, analyze, and evaluate evidence as part of building and revising models and explanations.
Intro to Aeronautics (109-123)	NJ	SCI.7-8.5.1.8.B.b	Mathematics and technology are used to gather, analyze, and communicate results.
Intro to Aeronautics (109-123)	NJ	SCI.7-8.5.1.8.B.2	Gather, evaluate, and represent evidence using scientific tools, technologies, and computational strategies.
Scientific Method(124-144)	NJ	SCI.7-8.5.1.8.B.b	Mathematics and technology are used to gather, analyze, and communicate results.
Scientific Method(124-144)	NJ	SCI.7-8.5.1.8.B.2	Gather, evaluate, and represent evidence using scientific tools, technologies, and computational strategies.
Scientific Method(124-144)	NJ	SCI.7-8.5.1.8.B.d	Scientific reasoning is used to support scientific conclusions.
Scientific Method(124-144)	NJ	SCI.7-8.5.1.8.B.4	Use quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.
Scientific Method(124-144)	NJ	SCI.7-8.5.1.8.C.3	Generate new and productive questions to evaluate and refine core explanations.